

The Claims

1. A method of detecting a signal component in a  
5 composite signal comprising;

- 10 a) accumulating samples of the composite signal to provide a series of frames each containing a plurality of signal samples;
- b) transforming each frame to provide transform products in the frames;
- 15 c) analyzing each frame to determine the number of transform products having an amplitude above a threshold; and
- 20 d) for each frame comparing that number to a validation range to determine if the frame contains the signal component.

2. The method according to claim 1, further including determining if the signal component is present in the composite signal based on the contents of a  
25 series of the individual frames.

3. The method according to claim 1, further including detecting the presence of a predetermined characteristic in the composite signal before the  
30 operation of determining the presence of the signal component can be performed.

4. The method according to claim 1, wherein transforming each frame is performed by a Fast Fourier Transform.

5 5. The method according to claim 1, including overlapping the frames in conjunction with transforming each frame.

10 6. The method according to claim 1, wherein transforming each frame is performed by a windowed transforming.

15 7. The method according to claim 1, wherein comparing the number of transform products includes determining if the number of transform products exceeds the computed spectral average of the transform products within the validation range.

20 8. The method according to claim 1, wherein determining if the signal component is present comprises counting the number of frames containing the signal component until a predetermined number of frames is obtained indicating that the signal component is present in the composite signal.

25 9. The method according to claim 1, wherein the signal component is voice in a composite signal containing voice and non-voice components.

30 10. The method according to claim 1, wherein the signal component is voice in a composite signal containing voice and network tone components.

11. The method according to claim 3, wherein the signal component is voice and the predetermined characteristic is utilized to determine the presence of echo in the composite signal.

5

12. A system for detecting a signal component in a composite signal comprising:

10 a) a processing component to accumulate a number of samples of the composite signal to provide a series of frames each containing a plurality of signal samples and to transform each frame to provide transform products in the frame; and

15 b) a frame validation component to analyze each frame to determine the number of transform products each having an amplitude above a threshold and to compare that number to a validation range to determine if the frame contains the signal component.

20 25 13. The system according to claim 12, further including a component to determine if the signal component is present in the composite signal based on the contents of the individual frames.

30 14. The system according to claim 12, wherein the processing component includes a component to overlap the frames in conjunction with the transform of each frame.

15. The system according to claim 12, wherein the processing component includes a component to window the transform of each frame.

5 16. The system according to claim 12, further including a component to detect the presence of a predetermined characteristic in the composite signal before operation of the frame validation component can be completed.

10

17. The system according to claim 12, wherein the signal component is voice in a composite signal containing voice and non-voice components.

15

18. The system according to claim 12, wherein the signal component in voice is a composite signal containing voice and network tone components.

20

19. The system according to claim 16, wherein the signal component is voice and the predetermined characteristic is utilized to determine the presence of echo in the composite signal.

25

20. A program storage device readable by a machine embodying a program of instructions executable by the machine to detect a signal component in a composite signal, the instructions comprising:

30

a) accumulating a number of samples of the composite signal to provide a series of frames each containing a plurality of signal samples;

TELETYPE TRANSMITTER

- b) transforming each frame to provide transform products in the frames;
- 5 c) analyzing each frame to determine the number of transform products having an amplitude above a threshold; and
- 10 d) for each frame comparing that number to a validation range to determine if the frame contains the signal component.

TOP SECRET//COMINT